CLAIMS

1. An R-T-B system permanent magnet characterized by comprising:

a magnet body comprising a sintered body comprising at least a main phase comprising $R_2T_{14}B$ grains (wherein R represents one or more rare earth elements, and T represents one or more transition metal elements including Fe or Fe and Co essentially) and a grain boundary phase containing R in a larger amount than the main phase, the magnet body having a 300 μm or less thick (not inclusive of zero thick) hydrogen-rich layer having a hydrogen concentration of 300 ppm or more formed in the surface layer portion; and

an overcoat covering the surface of the magnet body.

2. The R-T-B system permanent magnet according to claim 1, characterized in that the hydrogen-rich layer has a hydrogen concentration of 1000 ppm or more.

3. The R-T-B system permanent magnet according to claim 1, characterized in that the hydrogen-rich layer has a thickness of 200 μm or less (not inclusive of 0).

4. The R-T-B system permanent magnet according to claim 1, characterized in that:

said sintered body comprises at least a main phase comprising $R_2Fe_{14}B$ grains and a grain boundary phase comprising R in a larger amount than the main phase; and

the sum of the areas of the $R_2Fe_{14}B$ grains of 10 μm or less in grain size is 90% or more, and the sum of areas of the $R_2Fe_{14}B$ grains of 20 μm or more in grain size is 3% or less, in relation to the total area of the main phase.

5. The R-T-B system permanent magnet according to claim 1, characterized in that the magnet body comprises a sintered body having a composition comprising R: 27.0 to 35.0 wt% (wherein R represents one or more rare earth elements), B: 0.5 to 2.0 wt%, O: 2500 ppm or less, C: 1500 ppm or less, N: 200 to 1500 ppm, and the balance substantially being Fe.

6. The R-T-B system permanent magnet according to claim 5, characterized in that the sintered body comprises one or more of Nb: 0.1 to 2.0 wt%, Zr: 0.05 to 0.25 wt%, Al: 0.02 to 2.0 wt%, Co: 0.3 to 5.0 wt% and Cu: 0.01 to 1.0 wt%.

7. The R-T-B system permanent magnet according to claim 1, characterized in that the hydrogen-rich layer has a hydrogen concentration of 300 to 1000 ppm.

8. The R-T-B system permanent magnet according to claim 1, characterized in that the overcoat is formed by electrolytic metal plating.

9. An R-T-B system permanent magnet characterized by comprising:

a magnet body comprising a sintered body comprising at least a main phase comprising $R_2T_{14}B$ grains (wherein R represents one or more rare earth elements, and T represents one or more transition metal elements including Fe or Fe and Co essentially) and a grain boundary phase containing R in a larger amount than the main phase; and

an overcoat covering the surface of the magnet body; wherein:

the magnetic body having a hydrogen-rich layer that is higher in hydrogen concentration than the central portion of the magnet body and is present in the surface layer portion.

10. The R-T-B system permanent magnet according to claim 9, characterized in that the hydrogen-rich layer has a hydrogen concentration decreased from the surface of the magnet body toward the inside of the magnet body.

11. The R-T-B system permanent magnet according to claim 10, characterized in that the hydrogen-rich layer has a hydrogen concentration continuously decreased from the surface of the magnet body toward the inside of the magnet body.

12. The R-T-B system permanent magnet according to claim 10, characterized in that the hydrogen-rich layer has a hydrogen concentration stepwise decreased from the surface of the magnet body toward the inside of the magnet body.

13. The R-T-B system permanent magnet according to claim 9, characterized in that the hydrogen-rich layer has a region having a hydrogen concentration of 1000 ppm or more.

14. The R-T-B system permanent magnet according to claim 13, characterized in that the hydrogen-rich layer has a region having a hydrogen concentration of 1000 ppm or more with a thickness of 300 μm or less.

15. The R-T-B system permanent magnet according to claim 9, characterized in that the overcoat is formed by electrolytic metal plating.